



ALMA



LMS



LMC



Laser Falcon



SELMA



LMS Mini



LMm



Laser Methane Fixed Wing



THE NEED:

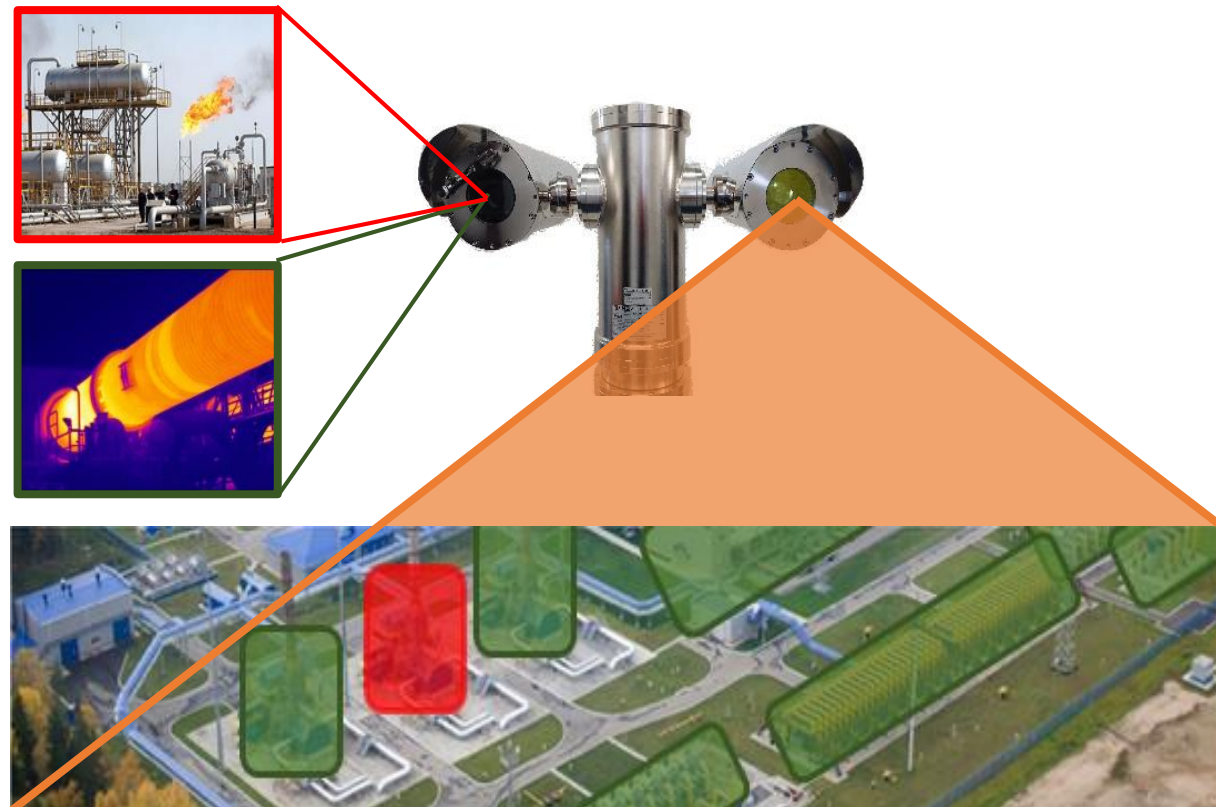
- Continuous Leak Detection
 - High Risk Areas
 - Remote Locations Without Full Time Staff
 - Compressor and Processing Stations
 - Storage facilities for Gas and LNG
 - LNG Terminals
 - Wellheads
- Security:
 - Intruder Detection
 - Remote Location Video
- Monitoring and Documenting Events Until Repaired
- City Gates
- Gas Plants
- Production sites



Basic Specification

- Autonomous 24/365 Operation
- Panoramic Scanning from Elevated Fixed Installation
 - 350° Horizontally and +/- 90° Vertically
 - Custom Programmable Automatic Scanning
- Methane Sensitive
 - Range: LMS 450 ft. LMS-Mini 150 ft.
 - Sensitivity: 25ppm*m @150 ft.
- Real-Time Monitoring and data acquisition
 - Remote Operation via VPN including manual control
 - SCADA compatibility / optional hardwired alarm signals and data Stream
- Video Capability: Visible or infrared coupled with standard intruder detection
- Real time reporting and event logging

Temperature Range -40°F - 120°F / -40°C – 50°C. Optional to 155°F / 70°C



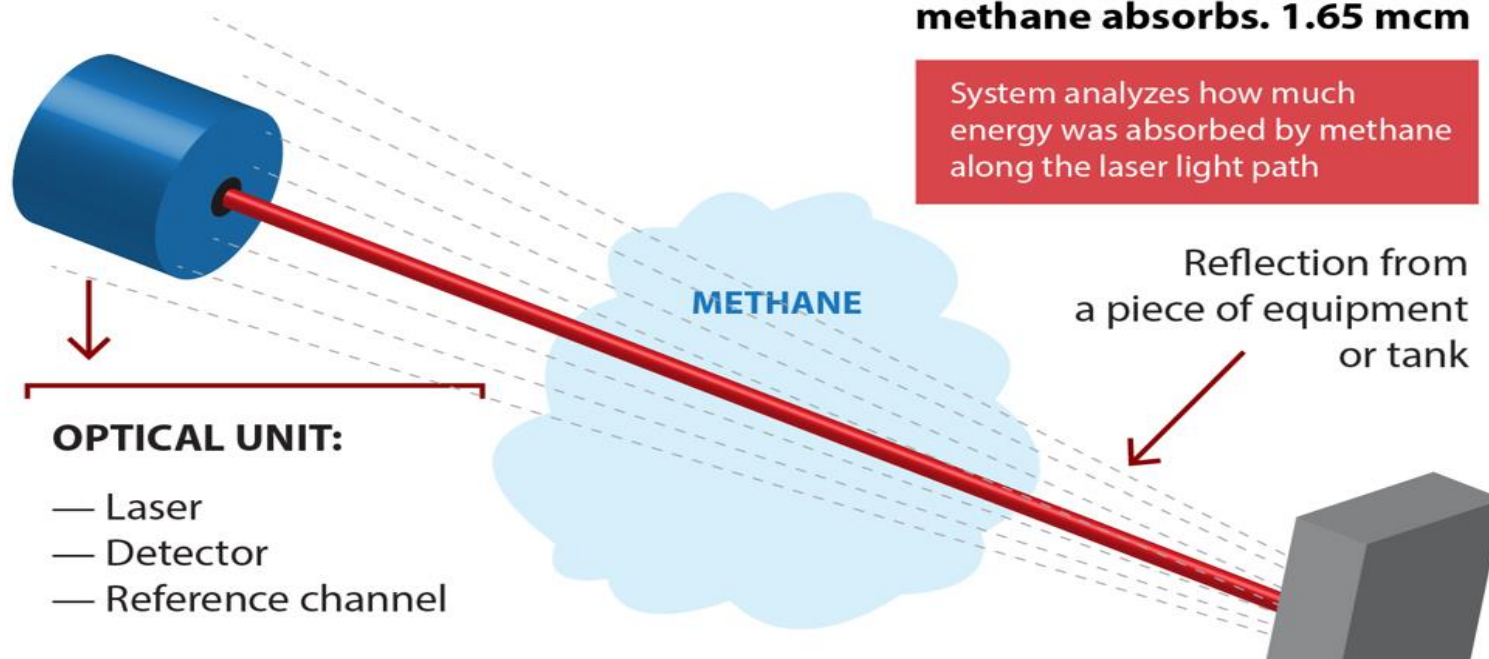
Detection Principle:

TUNABLE DIODE LASER ABSORPTION SPECTROSCOPY (TDLAS)

Laser beam (IR wavelengths)

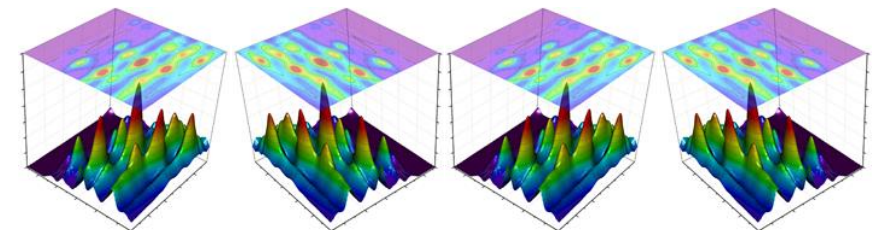
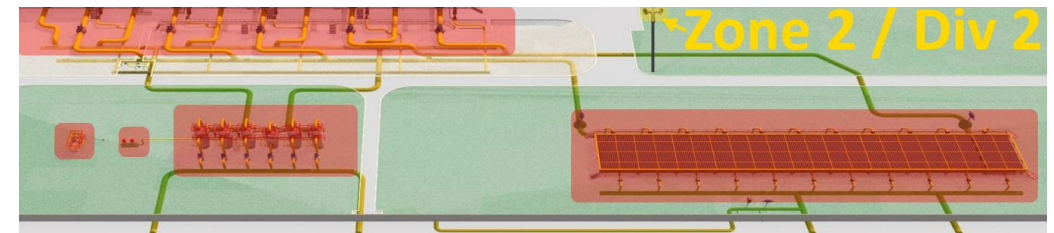
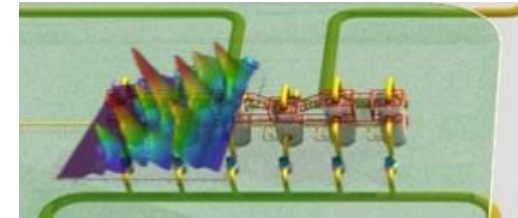
The laser emits
at a wavelength at which
methane absorbs. 1.65 mcm

System analyzes how much
energy was absorbed by methane
along the laser light path



LMS / LMS-Mini COST EFFECTIVE

1. Customized, Flexible, Easily Editable Scan Program
 - Modify Scan for Additions, Manage Wind Variance, Monitoring Known leaks...
2. Only One Device Instead of Multiple Static Sampling Device
 - Need 2-6 Static Sampling Devices Per Location to Account for Wind Variance
3. Only ATEX Zone 2 (Division 2) Required
 - Due to Range and Location on Mast
4. Total Emission Monitoring Regulation Requirements
 - Statistical Population Comparison via 3D Plots of Monthly Area Scan Data.



LMS / LMS-Mini INSTALLATION

1. Mast or structure to support 145lbs PTZ and 22lbs of support equipment (15ft from PTZ)
2. 110 or 220 VAC electrical to support equipment box
3. 110 or 220 VAC electrical to computer/laptop
4. Network connection between support equipment box and computer/laptop
5. Internet or internal network connection for computer/laptop
 - For field install, rain proof housing for computer/laptop
 - Optional hardwired digital output to Facility Safety/SCADA
 - Can be located either in support equipment box or at computer/laptop
 - Installation consultation (4 hours), drawings, and on-site start-up included



LMS / LMS-Mini INSTALLATION



Leaks

200

0

Amplitude 3.14 mV

Control

Automatically Scanning

Manual Control

Vert. Speed

2.50

Horiz. Speed


5.00

Azimuth -2.44

Tilt -8.40

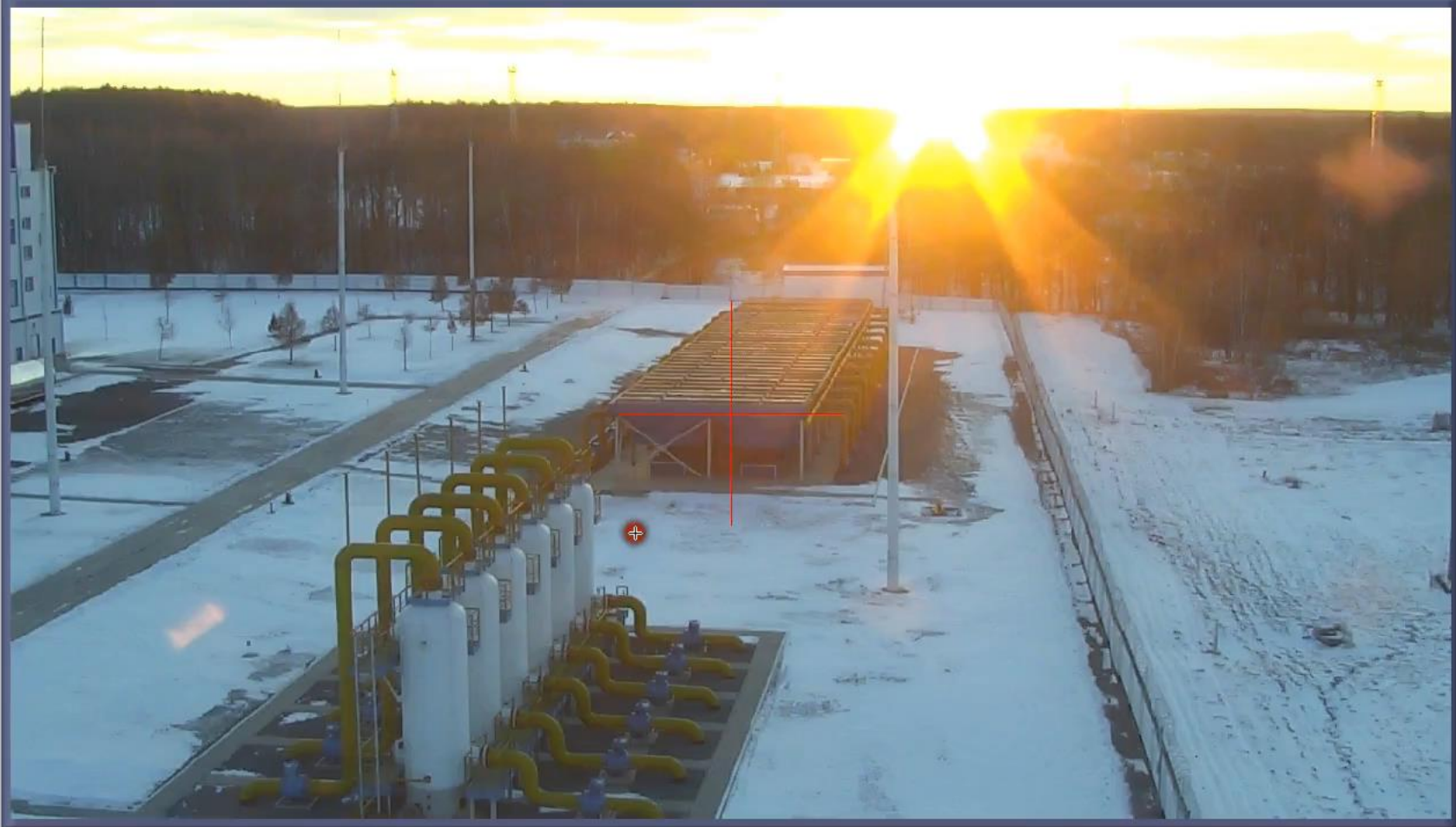
0 - PTH

Switching Type

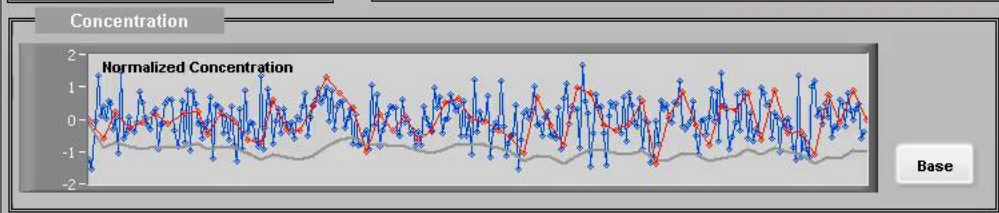


Scheme

Camera / Scheme



Delete Leaks



Event Log

Status	Time	Source	Event
	22.11.16 16:55:25.76	LMS System	Startup time 22.11.16 16:55:23
	22.11.16 16:56:45.38	System LMS	Starting Scan Mode
	22.11.16 16:56:45.51	User Action	Save Data
	22.11.16 16:56:46.58	User Action	Pan/Tilt Has Been Stopped By The Operator
	22.11.16 16:56:46.69	Gas Detection System	Save Data

Event Log

LMS mini Portable Demo Installation





PERGAM TECHNICAL SERVICES

We invent - to prevent

High Tech and NDT
Gas Leak Detection

For a field evaluation please contact Johan at 425-503-8127



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